

AD-A074 459

ARMY ENVIRONMENTAL HYGIENE AGENCY ABERDEEN PROVING GR--ETC F/G 6/20  
TOPICAL HAZARD EVALUATION PROGRAM OF CANDIDATE INSECT REPELLENT--ETC(U)  
AUG 79 A W SINGER

UNCLASSIFIED

USAEHA-75-51-0832-79

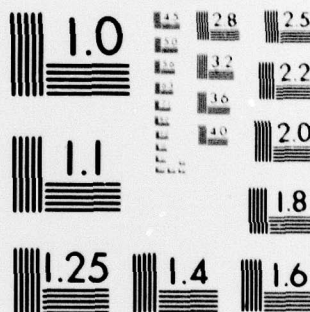
NL

| OF |

AD  
A074459



END  
DATE  
FILMED  
11-79  
DDC



MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

MA 074459



DDC FILE COPY

A  
E  
H  
A

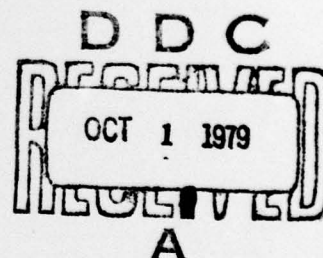
42

LEVEL <sup>4</sup>

**UNITED STATES ARMY  
ENVIRONMENTAL HYGIENE  
AGENCY**

**ABERDEEN PROVING GROUND, MD 21010**

TOPICAL HAZARD EVALUATION PROGRAM  
OF CANDIDATE INSECT REPELLENT AI3-36323  
US DEPARTMENT OF AGRICULTURE PROPRIETARY COMPOUND  
STUDY NUMBER 75-51-0832-79  
OCTOBER 1975 - JUNE 1979



Approved for public release; distribution unlimited.

79 09 27 018

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER 75-51-0832-79	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Topical Hazard Evaluation Program of Candidate Insect Repellent AI3-36323, US Depart- ment of Agriculture Proprietary Compound, [REDACTED] No. 75-51-0832-79, October 1975 - June 1979		5. TYPE OF REPORT & PERIOD COVERED Final, Oct 75 - Jun 79
7. AUTHOR(s) ALLEN W. SINGER [REDACTED]		6. PERFORMING ORG. REPORT NUMBER
8. PERFORMING ORGANIZATION NAME AND ADDRESS US Army Environmental Hygiene Agency Aberdeen Proving Ground, MD 21010		9. CONTRACT OR GRANT NUMBER(s)
11. CONTROLLING OFFICE NAME AND ADDRESS Commander US Army Health Services Command Fort Sam Houston, TX 78234		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) 12 18		12. REPORT DATE Oct 75 - Jun 79
		13. NUMBER OF PAGES 6
		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited. 11 27 Aug 79		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) 9 Final rept. Oct 75-Jun 79,		
18. SUPPLEMENTARY NOTES 14 USAEHA-75-51-0832-79		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Topical Hazard Evaluation skin irritation USDA Proprietary Compound eye irritation AI3-36323 candidate repellent		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) A hazard evaluation of AI3-36323 was performed by means of laboratory animal studies using rats, rabbits, and guinea pigs. The technical grade compound caused moderate corneal and conjunctival irritation of the eyes of rabbits, but no primary skin irritation. It did not cause a photochemical sensitization reaction or sensitize guinea pigs, and did not demonstrate an acute ingestion hazard.		

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

038 150

xlt



Unclassified

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

20. it is suggested it be purified through activated charcoal before being resubmitted in its proposed use formulation and/or concentration.

Accession For	
NTIS GRA&I	<input checked="checked" type="checkbox"/>
DDC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By _____	
Distribution/	
Availability Codes	
Dist	Avail and/or special
A	

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)



DEPARTMENT OF THE ARMY  
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY  
ABERDEEN PROVING GROUND, MARYLAND 21010

CPT Singer/bb/AUTOVON  
584-3980

**17 AUG 1979**

HSE-LT-T/WP

SUBJECT: Topical Hazard Evaluation Program of Candidate Insect Repellent  
AI3-36323, US Department of Agriculture Proprietary Compound, Study  
No. 75-51-0832-79, October 1975 - June 1979

Executive Secretary  
Armed Forces Pest Control Board  
Forest Glen Section, WRAMC  
Washington, DC 20012

A summary of the pertinent findings and recommendations of the inclosed report follows:

A hazard evaluation of AI3-36323 was performed by means of laboratory animal studies using rats, rabbits, and guinea pigs. The technical grade compound caused moderate corneal and conjunctival irritation of the eyes of rabbits, but no primary skin irritation. It did not cause a photochemical sensitization reaction or sensitize guinea pigs, and did not demonstrate an acute ingestion hazard. Based on the eye irritation reaction, it was recommended that no further testing be performed on AI3-36323. However, if this compound presents a significant improvement in pest repellent properties over existing compounds, it is suggested it be purified through activated charcoal before being resubmitted in its proposed use formulation and/or concentration.

FOR THE COMMANDER:

BRENDAN E. JOYCE, PH.D.  
LTC(P), MSC  
Director, Laboratory Services

1 Incl  
as (5 cy)

CF:  
HQDA (DASG-PSP)  
Cdr, HSC (HSPA-P)  
Dir, Advisory Ctr on TOX, NRC  
Supt, AHS (HSA-IPM)  
USDA, ARS-Southern Region  
USDA, ARS (Dr. Terrence McGovern)



DEPARTMENT OF THE ARMY  
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY  
ABERDEEN PROVING GROUND, MARYLAND 21010

HSE-LT-T/WP

TOPICAL HAZARD EVALUATION PROGRAM  
OF CANDIDATE INSECT REPELLENT AI3-36323  
US DEPARTMENT OF AGRICULTURE PROPRIETARY COMPOUND  
STUDY NUMBER 75-51-0832-79  
OCTOBER 1975 - JUNE 1979

1. AUTHORITY.

a. Letter, US Department of Agriculture - Agricultural Research Service, Southern Region, Insects Affecting Man Research Laboratory, Gainesville, Florida, 31 October 1975.

b. Memorandum of Understanding between the Department of the Army, Office of The Surgeon General; the US Army Health Services Command; the US Army Environmental Hygiene Agency; the Armed Forces Pest Control Board, and the US Department of Agriculture, effective 1970 with Amendment No. 1 effective August 1974.

2. REFERENCES.

a. Report, HSE-LT, this Agency, 19 March 1975, subject: Primary Irritation Evaluation of Candidate Insect Repellents, Study Numbers 51-060-75 through 51-070-75.

b. Toxicology Division Procedural Guide, USAEHA, 1972, revised 1976.

3. PURPOSE. The purpose of this study is to provide guidance for further entomological testing of the candidate insect repellent AI3-36323.

4. SUMMARY OF FINDINGS. A hazard evaluation of the candidate repellent AI3-36323, USDA Proprietary Compound, was conducted by this Agency using New Zealand White rabbits for skin and eye studies, Hartley guinea pigs for a skin sensitization study and Sprague-Dawley rats for determination of oral toxicity. A tabular presentation of animal toxicity data developed in this Agency follows:\*†

\* In conducting the studies described in this report, the investigators adhered to the "Guide for the Care and Use of Laboratory Animals," US Department of Health, Education and Welfare Publication No. (NIH) 74-23, revised in 1972, and in 1978.

† The experiments reported herein were performed in animal facilities fully accredited by the American Association for the Accreditation of Laboratory Animal Care.

Approved for public release; distribution unlimited.



Topical Hazard Eval Study No. 75-51-0832 -79, Oct 75-Jun 79

TABULAR PRESENTATION OF DATA

Test	Results	Interpretation
------	---------	----------------

SKIN IRRITATION STUDIES\*

Rabbits

Single 24-hour application to intact and abraded skin of New Zealand White rabbits.	Compound AI3-36323 produced no primary irritation of the intact skin and the skin surrounding an abrasion.	USAEHA Category I (ref Appendix)
---	--	----------------------------------

0.5 ml technical grade compound applied to each of six rabbits.

EYE IRRITATION STUDIES\*

Rabbits

Single 24-hour application of 0.1 ml technical grade compound to one eye of each of six New Zealand White rabbits.	Compound AI3-36323 produced moderate irritation and injury to the cornea and conjunctiva in all rabbits tested.	USAEHA Category E (ref Appendix)
--	---	----------------------------------

APPROXIMATE LETHAL DOSE (ALD)

Oral

Rats (male) - no diluent	ALD >2200 mg/kg	Presents little lethal hazard from accidental ingestion.
--------------------------	-----------------	--

\* Data reported in USAEHA report (reference paragraph 2a)



Test	Results	Interpretation
------	---------	----------------

SENSITIZATION STUDIES

Guinea Pigs

Intradermal injections of 0.1 ml of a 0.1 percent suspension (w/v) of AI3-36323, or of dinitrochlorobenzene (DNCB)\* in a mixture containing 1 volume of propylene glycol and 29 volumes of saline.

Ten test guinea pigs received ten sensitizing doses over a 3-week period. After 2 weeks' rest, they were challenged with a 0.1 percent solution of AI3-36323.

Challenge dose of test compound (last intradermal injection) did not produce a sensitization reaction.

Compound AI3-36323 did not produce a sensitization reaction under these test conditions and is not expected to produce a sensitization reaction in man.

Ten positive control guinea pigs received ten sensitizing doses of DNCB over a 3-week period. After 2 weeks' rest, they were challenged with a 0.1 percent suspension of DNCB.

Positive control produced a marked sensitization reaction in 10 of 10 guinea pigs.

---

\* A known skin sensitizer.

---

Test	Results	Interpretation
------	---------	----------------

PHOTOCHEMICAL SKIN IRRITATION STUDIES

Rabbits

A single application (0.05 ml) of a 25 percent (w/v) solution of the compound and of a 10 percent (w/v) oil of Bergamot solution (positive control) in 95 percent ethyl alcohol were applied to the intact skin of six rabbits. Five minutes after application, the rabbits were exposed to UV light (365 nm) for 30 minutes at a distance of 10-15 cm.	A 25 percent solution of AI3-36323 in ethanol did not cause a photochemical irritation reaction under test conditions.  Positive control application and irradiation caused greater irritant effects than in unirradiated skin areas.	Compound AI3-36323 did not cause a photochemical irritation reaction under test conditions and is not expected to cause a photochemical irritation in humans.
---	---	---

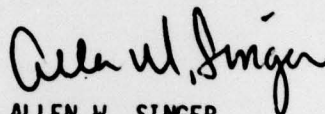
Control

Following UV exposures of the rabbits, 0.05 ml of test compound, positive control and diluent were applied to additional skin areas to serve as unirradiated control sites. Application areas were checked for skin irritation at 24, 48 and 72 hours.	Mild primary irritation was caused by all ethanol solutions of AI3-36323 (both control and test applications).	Ethanol solutions may be irritating to some humans.
--	--	---

Topical Hazard Eval Study No. 75-51-0832 -79, Oct 75-Jun 79

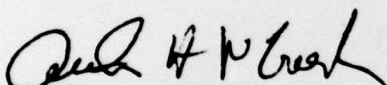
5. CONCLUSION. The candidate insect repellent AI3-36323 has a potential for causing moderate irritation and damage to corneal and conjunctival tissue and does not qualify as a nonhazardous repellent.

6. RECOMMENDATION. Under the provisions of the Memorandum of Understanding (paragraph 1b), it is recommended that AI3-36323, USDA Proprietary Compound, not be approved for further testing as a candidate insect repellent. However, if this compound presents a significant improvement in pest repellent properties over existing compounds, it is suggested it be purified through activated charcoal before being resubmitted in its proposed use formulation and/or concentration.



ALLEN W. SINGER  
CPT, VC  
Laboratory Veterinary Officer  
Toxicology Division

APPROVED:



ARTHUR H. MCCREESH, Ph.D.  
Chief, Toxicology Division



APPENDIX

TOPICAL HAZARD EVALUATION PROGRAM  
DEFINITIONS OF CATEGORIES OF COMPOUNDS BEING  
CONSIDERED FOR ACUTE SKIN APPLICATION

CATEGORY I - Compounds producing no primary irritation of the intact skin or no greater than mild primary irritation of the skin surrounding an abrasion. (INTERPRETATION: No restriction for acute application to the human skin.)

CATEGORY II - Compounds producing mild primary irritation of the intact skin and the skin surrounding an abrasion. (INTERPRETATION: Should be used only on human skin found by examination to have no abrasions or may be used as a clothing impregnant.)

CATEGORY III - Compounds producing moderate primary irritation of the intact skin and the skin surrounding an abrasion. (INTERPRETATION: Should not be used directly on the skin without a prophetic patch test having been conducted on humans to determine irritation potential to human skin. May be used without patch testing, with extreme caution, as clothing impregnants. Compound should be resubmitted in the form and at the intended use concentration so that its irritation potential can be reexamined using other test techniques on animals.)

CATEGORY IV - Compounds producing moderate to severe primary irritation of the intact skin and of the skin surrounding an abrasion and, in addition, producing necrosis, vesiculation, and/or eschars. (INTERPRETATION: Should be resubmitted for testing in the form and at the intended use concentration. Upon resubmission, its irritation potential will be reexamined using other test techniques on animals, prior to possible prophetic patch testing in humans, at concentrations which have been shown not to produce primary irritation in animals.)

CATEGORY V - Compounds impossible to classify because of staining of the skin or other masking effects owing to physical properties of the compound. (INTERPRETATION: Not suitable for use on humans.)

EYE CATEGORIES:

A. Compounds noninjurious to the eye. INTERPRETATION: Irritation of human eyes is not expected if the compound should accidentally get into the eyes, provided it is washed out as soon as possible.

B. Compounds producing mild injury to the cornea. INTERPRETATION: Should be used with caution around the eyes.

C. Compounds producing mild injury to the cornea, and in addition some injury to the conjunctiva. INTERPRETATION: Should be used with caution around the eyes and mucosa.

D. Compounds producing moderate injury to the cornea. INTERPRETATION: Should be used with extreme caution around the eyes.

E. Compounds producing moderate injury to the cornea, and in addition producing some injury to the conjunctiva. INTERPRETATION: Should be used with extreme caution around the eyes and mucosa.

F. Compounds producing severe injury to the cornea and to the conjunctiva. INTERPRETATION: Should be used with extreme caution. It is recommended that use be restricted to areas other than the face.